IPART Energy Sustainability Schemes

Applying for Product Acceptance

Guide

August 2024

Acknowledgment of Country

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders both past and present.

We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

Tribunal Members

The Tribunal members for this Guide are:

Carmel Donnelly PSM, Chair

Jonathan Coppel

Sharon Henrick

The Independent Pricing and Regulatory Tribunal

IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website.

Contents

Contents iii

1 About this document 1

1.1 Overview 1
1.2 Purpose 1
1.3 Is this document for you? 1
1.4 How to use this document 2
1.5 Document Control 2

2 Understanding the Accepted Products List and which products require acceptance 3

2.1 Why do we have the Accepted Products List and what products does it cover? 3
2.2 Accepted Products List 4
2.3 Lighting 4
2.4 Water heaters 6
2.5 Chimney dampers 6
2.6 Streamlined pathways 6
2.7 Refusals, cancelled or amended products 6
2.8 Accepted Products List and marketing of products 7

3 Preparing your application 8

3.1 Required information and application submission 8
3.2 Lighting 8
3.3 Water heaters 10
3.4 Chimney Dampers 11

4 Lighting Requirements 12

4.1 Lamp Circuit Power 12
4.2 Electrical Safety 14
4.3 Electro-Magnetic Compatibility 15
4.4 Power Factor 15
4.5 Series applications 16
4.6 Strip lights 16

5 Applying for product acceptance 17

5.1 How to apply 17
5.2 Lighting and chimney dampers 17
5.3 Water heaters 18

A Lighting equipment requirements – Commercial Lighting 20

B Lighting equipment requirements – HEER 23

C Lighting equipment requirements – PIAM&V and MBM 52

D Additional Information – Evidence Documents 54

D.1 Lamp Life 54
D.2 Sponsorship forms for non-ACP applicants 57
D.3 HEER Tool 57

D.4 Product specification sheet 57

1 About this document

1.1 Overview

The Energy Security Safeguard schemes (**Safeguard**) provide financial incentives to install, upgrade or replace equipment to use less energy, and reduce electricity use at peak times. Where the activity involves installation of new or replacement appliances and products, these may need to be listed on a public list or register to be eligible under the Safeguard. A key list relevant to the Safeguard is the list of products 'accepted' by the Scheme Administrator (Accepted Products List).

This document provides information on the products covered by the Accepted Products List and the requirements and process to get published on this list. For more information on the type of products covered by other registers, please refer to Product Acceptance.

1.2 Purpose

The purpose of this document is to help businesses or individuals who are planning to supply or install products that need to be accepted for use under the Safeguard. It offers guidance on the product requirements outlined in the *Energy Savings Scheme Rule of 2009* (**ESS Rule**) and the *Peak Demand Reduction Scheme Rule of 2022* (**PDRS Rule**). It also provides instructions for applying for acceptance.

The guide only provides information of a general nature and should not be relied upon as legal advice specific to your circumstances.

1.3 Is this document for you?

You should use this document if you are an:

- **Accredited Certificate Provider (ACP):** to understand product acceptance and to ensure your implementations comply with the Safeguard's requirements.
- **Equipment manufacturer and/or distributor:** to supply equipment for use in the Safeguard, you need to understand product acceptance procedures and requirements.

If you intend to apply for product acceptance, you should read and understand this document in its entirety before applying for product acceptance.

If you are an **individual or business interested in activities under the Safeguard,** while not essential, understanding the product acceptance process can provide you with valuable insights into acceptable equipment and contribute to informed decision-making.

1.4 How to use this document

Before applying for acceptance, you should read and understand all the relevant sections of this guide that apply to the type of product you are seeking acceptance. A good understanding of the application process and requirements will assist you to lodge a complete application and aid a smoother application process.

- **Section 2** - provides you with general information on the application for product acceptance process and what information you are required to provide.
- **Section 3** - outlines what evidence you need to support your application for different product types. This chapter and the appendices have more specific information for each product and calculation method. They should be used together to ensure you meet all requirements.
- **Section 4** - explains the actual process of applying for product acceptance.

1.5 Document Control

Version Number	Change Description	Date Published
V1.0	Initial publication to combine information from previous publications and systems: • Commercial Lighting - Lighting Requirements Guide, V2.2 • HEER - Lighting Requirements Guide, V1.4 • PIAM&V and MBM Lighting Requirements Guide, V1.1 • ESS website • ELT Portal.	5 September 2022
V2.0	Updated to include information for Peak Demand Reduction Scheme	14 October 2022
V3.0	Updated to reduce repetition, provide clarifications, streamline information across the website and guidance documents and include legislative changes from the 2024 Rule Change.	5 August 2024

2 Understanding the Accepted Products List and which products require acceptance

This chapter provides a general overview of the products that need to be accepted by IPART prior to use in activities under the Safeguard.

Key points

- Products only need to be accepted for certain activity types.
- The application process varies depending on the product type and calculation method.
- We publish all accepted products on TESSA[1].
- We will publish your product on the Accepted Products List if it meets requirements.

2.1 Why do we have the Accepted Products List and what products does it cover?

Product acceptance involves demonstrating that a product meets specific energy efficiency, performance and safety requirements outlined in the ESS Rule and the PDRS Rule. Accepted products can be used in activities under the Safeguard, allowing ACPs to create Energy Savings Certificates and Peak Demand Reduction Certificates (**Certificates**).

The Scheme Administrator needs to accept the following product types before use in activities under the Safeguard:

- water heaters
- lighting
- chimney dampers.

ACPs can install the products published on the list provided they are accepted by the Scheme Administrator for the relevant activity. Refer to Product Acceptance page for a summary of the calculation methods and activity definitions for each of these products.

[1] The Energy Security Safeguard Application (**TESSA**) is our publicly available online system. TESSA lists accepted products, current accreditations and ACP information, it also functions as an application database and certificate registry.

2.2 Accepted Products List

We publish all accepted products on the Accepted Products List on the TESSA portal.

Each product must meet specified equipment requirements. Some of these requirements must be met upfront and applicants need to provide information as part of the application to be eligible for publication on the Accepted Products List.

Other requirements must be met by ACPs at the time of implementing an activity. Refer to the method guide for your activity to ensure you understand the evidence requirements that must be met at the time of implementation.[2]

ACPs must maintain documentation demonstrating they have met equipment requirements for each implementation, which will be checked as part of audits.

2.3 Lighting

Under the Energy Savings Scheme (**ESS**) you can replace or modify outdated lighting equipment and install more efficient lighting, like Light Emitting Diodes (**LEDs**). Certain lighting equipment like this must be accepted by the Scheme Administrator to be used under the following calculation methods:

- Commercial Lighting Energy Savings Formula (**Commercial Lighting**)
- Home Energy Efficiency Retrofits (**HEER**) (Activity Definitions E1, E2, E3, E5, E11 and E13)
- Project Impact Assessment with Measurement and Verification (**PIAM&V**)
- Metered Baseline Method (**MBM**).

This applies to all lighting equipment that is an ''other equipment class" (as listed and defined in Table A9.3 of Schedule A to the ESS Rule).[3]

You **do not** have to apply for acceptance of lighting equipment if the lighting equipment is within a standard equipment class (as listed and defined in Table A9.1 of Schedule A to the ESS Rule).

2.3.1 Lighting classifications under the HEER method

The HEER method defines the LED types that can be replaced in homes and small businesses (the Commercial Lighting method does not). To address specified replacement requirements, HEER applicants must appropriately categorise lighting types for the activity definition(s) they apply for. Some lighting types can fall into multiple classifications.

Table A9.3 of the ESS Rule includes the different lighting classifications and definitions that apply across all relevant calculation methods.

---

[2] Example: some lighting products must be compatible with other equipment on the same circuit, such as transformers or dimmers. A declaration from the installing electrician is required to demonstrate compatibility.

[3] This equipment is also referred to as emerging lighting technologies, or ELTs.

There are multiple types of linear lamps (lamps with an elongated shape, often seen with a lighting channel, tube or strip).

Under activity definitions E5 and E13, the following products can be considered a linear lamp:

- LED Luminaire – fixed type
- LED Luminaire – Linear Lamp
- LED Luminaire – recessed.

However, the product must be accepted for the relevant activity definition.

Different standards are required to be met by lighting products depending on the equipment classification. See Table A.2 for relevant standards that must be met depending on the equipment classifications.

Additionally, most products could also fall under the LED Lamp and Driver category if the product is a declared article.

For example, a linear lamp with a separate driver that is not hardwired could be applied for as an LED Lamp and Driver or LED Luminaire – Linear Lamp.

Example

Below in Table 1 is a mock-up of the Accepted Products List. Product1 and Product2 are from the same series of lighting produced by a manufacturer. Despite having similar characteristics, the applicant has applied for acceptance under different activity definitions.

Product1 was accepted for both activity definitions E5 and E13. Conversely, Product2 was only accepted for activity definition E13. If an ACP wished to create ESCs from an implementation using Product2 under activity definition E5, it would first need to apply for product acceptance.

Table 1: HEER lighting Accepted Products List example

Accepted Product ID	Product Type	Method(s)	Activity Definition	Brand	Model Number
Product1	LED Luminaire – Linear Lamp	HEER	E5, E13	SampleBrand	LED_111
Product2	LED Luminaire – Linear Lamp	HEER	E13	SampleBrand	LED_112

2.3.2 Lighting product acceptance for PIAM&V and MBM

The Scheme Administrator's policy and practice is that where a product is accepted under Commercial Lighting or HEER methods, it is also automatically accepted for use under PIAM&V and MBM.

Where a product is listed on the TESSA Portal as accepted for the Commercial Lighting or HEER methods, it may also be used for PIAM&V and MBM.

2.4 Water heaters

Water heaters to be used in activities under the following calculation methods must be accepted by the Scheme Administrator:

- ESS
  - Activity Definitions D17, D18, D19, D20 and D21 of the HEER method
  - Activity Definitions F16 and F17 of the Installation of High Efficiency Appliances for Businesses (**IHEAB**) method
- PDRS
  - Activity Definition WH1 of the Reducing Demand Using Efficiency (**RDUE**) method (where the total capacity is greater than 425L).

2.5 Chimney dampers

Chimney dampers for ESS activities under Activity Definition E9 of the HEER method must be accepted by the Scheme Administrator.

2.6 Streamlined pathways

We have streamlined application pathways (where less information is required) for:

- lighting and water heater applications for products accepted under the Essential Services Commission's (**Commission**) Victorian Energy Upgrades (**VEU**) program
- HEER lighting applications for products accepted under the Commercial Lighting method.

Your product must be currently accepted as meeting equipment requirements to be eligible for the streamlined pathway. We will check that the product is listed as being currently accepted and, for lighting equipment, that the product is not a T5 adaptor kit.[4]

2.7 Refusals, cancelled or amended products

In some cases, we may refuse your application if we decide that the product is not eligible or that the documentation provided is unreliable.

We may also amend or cease to accept a product (ie acceptance of product is cancelled). We notify all relevant ACPs when a product is cancelled or amended. TESSA lists the "effective to" and "effective from" dates for each product.

[4] Generally, the requirements for lighting equipment in the VEU program are the same as the ESS, except that T5 adaptors are not eligible in the ESS. T5 adaptor kits are any equipment that enables a T8 or T12 luminaire to accommodate or support a T5 luminaire.

The TESSA products list will default to only show "active" products in the search feature. Cancelled products past their effective dates will not automatically be included in searches. To search and find cancelled products, you will need to enable the "cancelled" status in the list.

ACPs may create certificates for an activity that involves a cancelled product if it was accepted as at the implementation date.

ACPs may not create certificates if the product acceptance was cancelled before the implementation date.

2.8 Accepted Products List and marketing of products

We do **not** have a role in "**approving**" products for use in NSW. Our role is limited to publishing products "accepted" as meeting Equipment Requirements defined in the ESS Rule and further detailed in our guidance materials.

We must accept products under Clauses 9.2A.2, 7A.21, 8.4A of the ESS Rule and clause 6.7.2 of the PDRS Rule. This includes publication of values for use in calculations of energy savings or peak demand reduction capacity for each accepted product.

Please refer to Guidance on marketing your product for further information on how you can promote and advertise ESS or PDRS accepted products from the Accepted Products List.

3 Preparing your application

This chapter provides an overview of essential documents for applications and alternative application pathways available under different circumstances. This section is not exhaustive and should be used in addition to the appendices to ensure a complete application.

Key points

- There are standard documents required to be submitted for each product type and calculation method.
- There are additional documents required to meet specific evidentiary requirements for each application type.
- There are streamlined pathways available under certain circumstances.

3.1 Required information and application submission

To ensure efficient processing of your application, you need to:

- Provide accurate product information (brand, model number, category) and supporting documents.
- Ensure submitted documents meet requirements and information is consistent throughout your application.
- Submit verification of product performance against established standards (e.g., test report from a NATA accredited laboratory or equivalent).
- Validate legitimacy of third-party documents (e.g., through laboratory website or contacting report author).

3.2 Lighting

All lighting applications require a product specification sheet, sponsorship forms (if you are a non-ACP) and documents to demonstrate that the product meets relevant safety standards. The following subsections contain specific information for applications for different calculation methods.

All lighting applications must be submitted on TESSA.

3.2.1 HEER method

Lighting applications under the HEER method must also include product application checklist (HEER) and **HEER Tool**.

If the product is already accepted for the Commercial Lighting method or in the VEU, you may apply using a streamlined pathway.

Table 1 Lighting – HEER method

Standard applications	Streamlined pathway (already accepted for Commercial Lighting)	Streamlined pathway (already accepted in VEU)
Product application checklist - HEER	Product application checklist – HEER	Product application checklist - HEER
Sponsorship form (if a non-ACP)	Sponsorship form (if a non-ACP)	Sponsorship form (if a non-ACP)
Product specification sheet	Product specification sheet	Product specification sheet
HEER Tool	HEER Tool	HEER Tool
Documents to meet safety and performance standards (see **Appendix B** and the **HEER Tool**)	Test reports confirming that minimum colour rendering Index (CRI), luminous efficacy, and downward light output are met (see **Appendix B** and the **HEER Tool**).	Test reports for downward light output and lifetime (see **Appendix B** and the **HEER Tool**). Products must be currently approved by the Commission as meeting the requirements of the VEU program for Activity 34.

3.2.2 Commercial Lighting method

Lighting applications under the Commercial Lighting method must also include product application checklist (Commercial Lighting).

If the product is already accepted in the VEU, you may apply using the streamlined pathway.

Table 2 Lighting – Commercial Lighting method

Standard applications	VEU streamlined pathway
Product application checklist – Commercial Lighting	Product specification sheet
Sponsorship form (if a non-ACP)	Sponsorship form (if a non-ACP)
Product specification sheet	Products must be currently approved by the Commission as meeting the requirements of the VEU program for Activity 34.
Documents to meet safety and performance standards (see **Appendix A**)	

3.2.3 PIAM&V and MBM

You **do not** have to apply for acceptance of lighting equipment as meeting the PIAM&V or MBM equipment requirements if the lighting equipment is:

- accepted for use under the Commercial Lighting or HEER methods, or
- within a standard equipment class (as listed and defined in Table A9.1 of Schedule A to the ESS Rule).

If the product is already accepted in the VEU, you may apply using the streamlined pathway.

Table 1 Lighting – PIAM&V and MBM

Standard applications	VEU streamlined pathway
Sponsorship form (if a non-ACP) Product specification sheet Documents to meet safety and performance standards (see **Appendix C**)	Sponsorship form (if a non-ACP) Product specification sheet VEU program product category of the lighting equipment Products must be currently approved by the Commission as meeting the requirements of the VEU program for Activity 34.

3.3 Water heaters

All water heater applications must be submitted via the VEU Registry. You should consult the Commission's product application resources webpage for the most up to date information on what is required with your application. Tables 2 and 3 provide an overview of the information required for each calculation method.

3.3.1 HEER Method

Table 2 Water heaters – HEER method

Standard applications	VEU streamlined pathway
Information that must be provided: See the Water heating and Space Heating/Cooling product application guide on the Commission's product application resources webpage.	**Information that must be provided:** Application form: • Solar (Gas Boosted) Water Heater Product Application Form, **or** • Solar (Electric Boosted) Water Heater Product Application Form, **or** • Heat Pump Water Heater Product Application Form. TRNSYS Model and modelling reports (modelled in accordance with AS/NZS 4234:2021)[5]. See Notice 02/2023. • AS/NZS 2712 certificate. Products must be currently approved by the Commission as meeting the requirements of the VEU program for: • Activity 1D for heat pump water heaters • Activity 1C for solar (electric boosted) water heaters • Activity 1F & 3B for solar (gas boosted) water heaters.

[5] A reference to AS/NZS 4234 is a reference to AS/NZS 4234:2021 only, effective as of 1 June 2023. Products modelled to the 2008 standard were end-dated as of 30 June 2024. The 2008 standard is no longer accepted, and all products must be modelled to the 2021 standard. See Notice 02/2023 for further details.

3.3.2 IHEAB Method

Table 3 Heat pump water heaters – IHEAB method

Standard applications
Information that must be provided: See the following documents on the Commission's product application resources webpage: • Commercial and Industrial Heat Pump Water Heater Product Application Guide, and • Commercial and Industrial Heat Pump Water Heater Specifications sheet. Products must be modelled in accordance with Appendix A of the Commercial and Industrial Heat Pump Water Heater Product Application Guide. You must submit applications for products modelled in accordance with the most up to date version of AS/NZS 4234 (i.e. AS/NZS4234:2021) (see Notice 01/2022). Products must be currently approved by the Commission as meeting the requirements of the VEU program for Commercial and industrial heat pump water heater activity (Activity 44). This is equivalent to Activity Definitions F16 and F17 in the ESS.

3.3.3 RDUE Method

Heat pump water heater equipment installed under Activity Definition WH1 must meet the same equipment requirements as Activity Definitions F16 and F17 under the IHEAB method (refer Table 3) and have a capacity greater than 425L (effective 1 August 2024).

Product acceptance under the RDUE method will be automatically granted when accepted under the IHEAB method if they meet the Equipment Requirements for WH1.

Note: Heat pump water heaters with a capacity of or below 425L are not eligible under the RDUE method as of 1 August 2024. WH1 product applications will be assessed for capacity limits and listed separately in TESSA from the F16 and F17 accepted products. Ineligible products will be cancelled as of 31 July 2024 and can no longer be used to create Peak Reduction Certificates (PRCs) under the PDRS. See Notice 02/2024.

3.4 Chimney Dampers

Chimney damper applications must include a:

- Product specification sheet
- Product application checklist – HEER
- Sponsorship form (if a non-ACP).

4 Lighting Requirements

This section outlines the key requirements that must be met across most methods, however there are some differences and those are detailed further in the Appendices.

The following equipment requirements cover both product safety and performance, and are detailed in the sections below:

- Lamp Circuit Power (**LCP**)
- Electrical Safety
- Electro-Magnetic Compatibility (EMC), and
- Power Factor
- Lamp Life.

Table 1 Lighting Requirements – Definitions

LCP	Lamp Circuit Power is the combined power consumption of a lamp and its driver (control gear).
Electrical Safety	All electrical goods sold in NSW must meet the requirements of the Gas and Electricity (Consumer Safety) Act 2017 (NSW) and be safe to use
Laboratory Test Report	The Test Report should be completed by an independent testing laboratory, a NATA accredited laboratory (or equivalent). If you submit a Test Report from a non-Australian laboratory, you also need to submit evidence of the laboratory's appropriate accreditation. Tests are to be completed with the lamp and ballast as one unit.
Australian Certificate of Approval	A certificate confirming that a Declared Article meets Australian safety standards. A recognised certificate (which could be a State Approval Number, or from a recognised independent certifier) must be submitted.
Certificate of Suitability	A certificate from a state or territory Government Safety Regulator (e.g. Fair Trading NSW), or a JASANZ endorsed certificate to evidence the electrical safety of Non-Declared Articles. A JAS-ANZ endorsed certificate is a certificate issued by a JAS-ANZ accredited certification body that displays the JAS-ANZ symbol. The certificate must reference the relevant standard.
ERAC Supplier Code	Supplier Code issued by ERAC. You must either supply a screenshot or registration receipt showing details of supplier, date of expiry and ERAC code.
Lifetime Test Report	IES LM-80 and IES TM-21 test reports issued by an independent testing laboratory, accredited by NATA (or equivalent) to perform IES LM-80 testing. If you submit a Test Report from a non-Australian laboratory, you must also submit evidence of the laboratory's accreditation. The L70 value used must be at the temperature specified by the manufacturer of the Lamp.

4.1 Lamp Circuit Power

LCP is the power drawn by a single lamp and its associated control gear. If the control gear supplies multiple lamps, then the control gear losses are assigned pro-rata to each lamp, according to the power drawn by each lamp.

Compliance with the LCP requirements must be demonstrated with a test report from a NATA accredited laboratory (or equivalent)[6] that evidence both the testing and result.[7] Laboratory test reports must provide photographic evidence of all lamps represented by the test report. Reports must be conducted with the lamp and control gear (if applicable) that the product will be supplied and installed with.

The LCP value must be measured at 230V, 50Hz in the laboratory test report for the product, rounded up to two decimal points (e.g., 10.81). Where the lab report has results for tests conducted at numerous voltages, we will only accept LCP values from tests conducted at 230V, in line with AS/NZS 60598.1. If a test report has multiple results at 230V, we will accept the most conservative (highest) LCP value.

Where multiple samples of a product have been tested (eg. minimum of 10 samples as required by the HEER method), we will accept the stated result of the test population. This is usually reported as the stated average of the sample results.

If you are applying for acceptance of a product under the 'LED Lamp Only – ELV' equipment class, the evidence only needs to show the brand and model of the lamp, and the nominal lamp power.

For all other equipment classes, the evidence must show the brand and model of all the lighting equipment, including the control gear/driver. Similarly, the LCP value must represent the input power to the whole luminaire, not just the output power from the control gear.

4.1.1 NLP Requested (Lamp Only products)

NLP is Nominal Lamp Power, which is the power drawn by a single lamp (excluding any power consumed by control gear required to operate the lamp). You must provide a laboratory test report as evidence of the NLP for the product.

The NLP value must be measured at 230V, 50Hz in the laboratory test report for the product, rounded up to two decimal points e.g., 10.81. Where the lab report has results for tests conducted at numerous voltages, we will only accept LCP values from tests conducted at 230V, in line with AS/NZS 60598.1. If a test report has multiple results at 230V, we will accept the most conservative (highest) LCP value.

Where multiple samples of a product have been tested (eg. minimum of 10 samples as required by the HEER method), we will accept the stated result of the test population. This is usually reported as the stated average of the sample results.

---

6 An equivalent laboratory is a laboratory accredited by an organisation included in the Mutual Recognition Agreement (MRA) Network published by NATA.

7 You must supply evidence of the laboratory's appropriate accreditation to perform that test. A statement/mark of accreditation on the test report is sufficient.

4.1.2 Test Reports for LCP/NLP

Applicants typically provide an LM-79 test report as evidence of LCP/NLP values.

Although other equivalent methodologies are acceptable, we prefer LM-79 reports for their precision and accuracy in measuring actual performance. Therefore, we encourage you to provide LM-79 test reports. If more than one type of report for LCP/NLP is provided, we will prioritise the results of an LM-79 report.

4.2 Electrical Safety

You must demonstrate that your product complies with the NSW electrical safety requirements. There are **three options** that could apply. Choose the option that is appropriate for your product.

- If the control gear being used with the product is a declared article (refer below) you must attach an Australian Certificate of Approval for the control gear/driver that is produced by either NSW Fair Trading, or another certification body listed as a Recognised External Approval Scheme (**REAS**).[8] Please note that we do not accept certificates of approval or approval marks that are issued outside Australia.
- If the control gear being used with the product is not a declared article, you must attach an Australian Certificate of Suitability for your luminaire. We will accept either:
  - a Certificate of Suitability issued by NSW Fair Trading or another certification body listed as a REAS, or
  - a JAS-ANZ endorsed Certificate of Suitability that complies with JAS-ANZ's *Policy 06/13 – Certification of Non-Declared Articles classified as Emerging Lighting Technologies in the ESS*.[9]
- If you are only applying for acceptance of an Extra Low Voltage (**ELV**) lamp, and the application does not include the control gear/driver, you do not need to supply an electrical safety certificate.

Declared articles are as per the published NSW electrical safety requirements for a power supply.[10] A power supply (e.g., control gear) is a declared article if it:

- provides an output not exceeding 50 volts AC or 120 volts ripple free DC, and
- is a type to provide supply to separate luminaires.

The control gear is considered separate to the luminaire if:

- a person can easily separate the electrical connection between the control gear and the luminaire, and
- a person can easily separate the physical connection between the control gear and the luminaire.

8 Refer: www.fairtrading.nsw.gov.au/help-centre/online-tools/approved-electrical-articles-register.
9 Refer: www.jas-anz.org/australian-and-new-zealand-electrical-equipment-safety-system-equipment-safetyrules.
10 Refer: www.fairtrading.nsw.gov.au/help-centre/online-tools/approved-electrical-articles-register.

Therefore, if the control gear provides an output not exceeding 50 volts AC or 120 volts ripple free DC, and is of a type to supply separate luminaires, the control gear is a declared article, and you will also need to supply a Certificate of Approval for the control gear.

The brand name and model number must exactly match the brand name (or trade name) on the electrical safety certificate you provide in your application. This brand name will be the same name used when supplying the product to the Australian marketplace, as required by NSW safety certifiers.

4.3 Electro-Magnetic Compatibility

You must provide documentation showing that your lighting equipment meets the EMC requirements of the *Radio Communications Act 1992* (Cth). This is administered by the Australian Communication and Media Authority (**ACMA**). The Electrical Regulatory Authorities Council (**ERAC**) maintains the Database of Responsible Suppliers.[11]

Information accepted as evidence of compliance with electrical safety and EMC regulatory arrangements is:

- a Responsible Supplier Code issued by ERAC, and
- an ACMA Declaration of Conformity. It is a mandatory record keeping requirement under the Radio Communications Act 1992 for the responsible supplier to keep a Declaration of Conformity. For this reason, and to simplify the assessment process, this is the only piece of evidence we will accept.

You are **not** required to provide the actual EMC test report on which the Declaration of Conformity is based.

4.4 Power Factor

You must supply evidence of the true power factor of the lighting equipment in a test report from a NATA accredited laboratory (or equivalent)[12] that evidence both the testing and result (this is usually on the same report as the LCP).[13]

The power factor for the equipment must be above the acceptable limits, i.e., 0.9 for LED Lamp Only-ELV, and 0.55 for all other types.

Note: LED Luminaire - emergency lighting that operate at very low wattages may be accepted at lower power factors (e.g. emergency exit signs). These will be assessed on a case-by-case basis.

[11] Refer: equipment.erac.gov.au/Public/

[12] If the test report is issued by a non-Australian laboratory, you must supply evidence of the laboratory's appropriate accreditation to perform that test.

[13] True power factor means power factor that includes both the phase distortion due to inductance and capacitance and harmonic distortion.

4.5 Series applications

If your application is for a series of related products, the supporting documentation provided must cover all the products in that application.

In some cases, we may accept an application where the brand name and/or model number you submit is different to those in the supporting documentation, but only if you provide a signed reconciliation statement from the manufacturer to confirm the products are the same. This manufacturer's declaration must reconcile the brand and model numbers, along with a letter signed by the applicant confirming its relevance to the application.

However, the supporting safety certificate must always list the correct Brand and Model Number. The products must share the same LED chip.

In some circumstances, you may submit one test report to represent several similar products. Each test report must identify the brand and model of the product to which it applies.

4.6 Strip lights

Strip lights can be used in lighting upgrades under Commercial Lighting, PIAM&V and MBM.

For Commercial Lighting applications, compliance with the LCP requirements must be provided. Compliance with the LCP requirements must be demonstrated by providing a test report from a NATA accredited laboratory (or equivalent) that evidence both the testing and result.

Since strip light lengths and types vary, the strip light must be tested at the length that it is intended to be installed. The test report must clearly indicate the LCP for the length that was tested in metres. All strip lighting products must be tested with the associated driver.

How to apply in TESSA:

- If you want to install a strip light at varying lengths, you must apply for product acceptance for each length with the LCP specified for each length.
- Select the "Other Emerging Lighting Technology" product type.
- Enter the "Strip Length in Meters" section of the product data submission.

Energy savings calculations must use the LCP for the installation length as published in the accepted products list. ACPs must have evidence to demonstrate the LCP used in the calculations and the lengths of lighting installed. An auditor must be able to easily reconcile the length, model number and LCP. Strip lighting implementations may be subject to on-site verification during audit.

Clause 9.4.1(c) of the ESS Rule specifies compliance requirements and standards. Performance requirements must also be met (eg surfaces are lit, glare is controlled, shadowing work areas avoided, and minimum illuminance and safe movement met).

5 Applying for product acceptance

This chapter provides guidance on how to apply for product acceptance.

Key points

- Ensure you have all required documents and information prior to applying
- Lighting and chimney damper applications are made through the TESSA portal
- Water heater applications are made through the VEU registry.

5.1 How to apply

Before you start the application process it is essential to complete the following to ensure a quick and smooth application process:

1. Get familiar with the product acceptance process by reading all parts of this guide that are relevant for your product type, and for water heaters, read the relevant guide(s) on the VEU website.
2. Check that your product is not already on the Accepted Products List on the TESSA Portal for your calculation method and Activity Definition.
3. Gather all required evidence that you will need for a successful application.
4. Have your authorised signatory complete the relevant Product Application Checklist.
5. Ensure that your documentation is for the correct model(s) that you intend to apply for.

   Note: Submitting documentation with unmatching model numbers will result in a request for information (**RFI**), significantly slowing the acceptance process.
6. Lodge a case in TESSA for lighting or chimney damper applications or via the Commission's website for water heater applications.

   Note: To support a timely application process, make sure:

   – model number/s match in all documentation that you upload

   – supporting documents have clear naming conventions

   – there are no duplicate model numbers as these will not be accepted by TESSA. Check the list to ensure your product hasn't already been accepted.

5.2 Lighting and chimney dampers

You must lodge lighting and chimney damper applications on TESSA. Watch this video for specific instructions on lodging a product application case in TESSA.

We will communicate with you via notifications sent through the TESSA portal for regular matters, and additionally may contact you by phone for any other matters. It is your obligation to keep your contact details up to date on TESSA.

We will issue an RFI if we identify problems with your application that require clarification or if information is missing. You must respond to RFIs within 90 days. We may reject your application if you do not respond within this timeframe. We generally give you up to 2 RFIs to provide the required information.

You may withdraw your application at any time.

We will refuse your application if you are unable to demonstrate that the product meets requirements.

5.3 Water heaters

We have a joint application process with the Commission in Victoria. Therefore, you need to lodge your water heater applications through the VEU online system. You need to open a new VEU account if you do not have one.

See the Commission's website for application guides and resources.

Appendices

A Lighting equipment requirements – Commercial Lighting

This section sets out the requirements for Commercial Lighting. Table A9.4 of the ESS Rule outlines the equipment requirements and minimum performance requirements for Commercial Lighting.

Table A.1 Safety and performance requirements

Parameter	Requirement
Lamp Circuit Power/Nominal Lamp Power (LCP/NLP)	• Independent test report from a NATA accredited lab (or equivalent) that confirms LCP/NLP • Represents the input power to the whole luminaire, not just the output power from the control gear.
Safety	• Australian Certificate of Approval/Conformity for declared articles and self ballasted lamps, or • Australian Certificate of Suitability for all other lighting categories (except for LED Lamp only- ELVs)
Power Factor [1]	• ≥ 0.55 for luminaires; or • ≥ 0.9 for LED Lamp Only
Lifetime	• Independent test report from an accredited lab that confirms lifetime hours • L70 (70% of initial Downward Light Output) at least **30,000 hours**
Electro-magnetic compatibility (EMC)	• ERAC Responsible Supplier Code, and • ACMA Declaration of Conformity

1. **LED Luminaire - emergency lighting** that operate at very low wattages may be accepted at lower power factors, but will be assessed on a case by case basis.

Table A.2 Equipment and evidence requirements

		Specifications	**LCP/NLP /Output Voltage**	**Lifetime**			**Electrical Safety**		**Electromagnetic Compatibility (EMC)**		**Power Factor**
Required Documentation		Data/Specification Sheet (N.B required for each product or component)	Laboratory Test Report	Lifetime Test Report - LM-80-08 and TM-21 (L_{70} ≥ 30,000 hrs)	Manufacturer's chip declaration or ISTMT	Data / Specification Sheet	Australian Certificate of Approval	Certificate of Suitability	ERAC Responsible Supplier Code	ACMA Declaration of Conformity	Laboratory Test Report
Category	**Relevant Australian Standard**										
LED Lamp only-ELV		Yes	NLP	Yes	Yes						PF ≥ 0.9[3]
LED Lamp only-240V Self Ballasted	AS/NZS 62560	Yes	NLP	Yes	Yes		lamp		Yes	Yes	PF ≥ 0.55
Induction Luminaire	AS/NZS 60598.1	Yes	NLP			Yes		for luminaire[1]	Yes	Yes	PF ≥ 0.55
LED lamp and driver	AS/NZS 61347.1 and IEC 61347.2.13	Yes	LCP	Yes	Yes		for control gear, if control gear is a declared article[2]	for luminaire[1], if control gear is not a declared article[2]	Yes	Yes	PF ≥ 0.55
Modified Luminaire - LED Linear Lamp	AS/NZS 60598.2.1 or AS/NZS 60598.2.2										
LED Luminaire-fixed type	AS/NZS 60598.2.1										
LED Luminaire - Linear Lamp	AS/NZS 60598.2.1 or AS/NZS 60598.2.2										
LED Luminaire-floodlight	AS/NZS 60598.2.5										
LED Luminaire-recessed	AS/NZS 60598.2.2										
LED Luminaire-high/lowbay	AS/NZS 60598.2.1										

		Specifications	LCP/NLP /Output Voltage	Lifetime			Electrical Safety		Electromagnetic Compatibility (EMC)		Power Factor
Required Documentation		Data/Specification Sheet (N.B required for each product or component)	Laboratory Test Report	Lifetime Test Report - LM-80-08 and TM-21 (L_{70} ≥ 30,000 hrs)	Manufacturer's chip declaration or ISTMT	Data / Specification Sheet	Australian Certificate of Approval	Certificate of Suitability	ERAC Responsible Supplier Code	ACMA Declaration of Conformity	Laboratory Test Report
Category	**Relevant Australian Standard**										
LED Luminaire-streetlight	AS/NZS 60598.1 and AS/NZS 1158.6 or IEC 60598-2-3	Yes	LCP	Yes	Yes		for control gear, if control gear is a declared article[2]	for luminaire[1], if control gear is not a declared article[2]	Yes	Yes	PF ≥ 0.55[5]
LED Luminaire-emergency lighting[4]	AS/NZS 60598.2.22										
LED Luminaire-hospital use	AS/NZS 60598.2.25										
Voltage Reduction Unit	AS/NZS 60335.1	Yes	Output Voltage					Yes	Yes	Yes	

1. A **luminaire** is defined as an apparatus that distributes, filters or transforms the light emitted from a light source, including Lamps, Control Gear and all components necessary for fixing and protecting the Lamps, including the troffer.
2. The **control gear** is a declared article under the published NSW electrical safety requirements if it provides an output not exceeding 50 volts AC or 120 volts ripple free DC, **and** is a type to provide supply to separate luminaires.
3. The **Power Factor Test** must be conducted on a transformer designed for ELV Halogen Lamps (minimum 35W). The reported power factor must be the "true" power factor (e.g., include the effects of Harmonic distortion).
4. **Emergency Lighting** with multiple power modes must be tested at full output power.
5. **LED Luminaire - emergency lighting** that operate at very low wattages may be accepted at lower power factors, but will be assessed on a case by case basis.

B Lighting equipment requirements – HEER

This section sets out the equipment requirements for Activity Definitions E1, E2, E3, E5, E11 and E13 of Schedule E of the ESS Rule.

Products related to Activity Definition E4 (Replace a T8 or T12 luminaire with a T5 luminaire) **do not require acceptance**, as T5 linear fluorescent luminaires are considered 'standard' equipment (refer to Table A9.1 of the ESS Rule).

The equipment requirements for the HEER method are different to those for the Commercial Lighting and other methods. **Lighting products accepted for use under the Commercial Lighting method are not automatically accepted for use under the HEER method**. The tables in this appendix list all equipment requirements that apply for each activity and specify the test reports to evidence the parameters in table B.1. Some equipment requirements must be met either at the time of product acceptance, or at the time of implementation.

Table B.1 Additional HEER safety and performance requirements

Parameter	Requirement
Minimum Colour Rendering Index (CRI)	Average ≥ 80
Luminous efficacy	≥ 48 lumens/watt
Downward Light Output	≥ 462 lumens
Lifetime	L70 (70% of initial Downward Light Output) at least **20,000 hours**[14]
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011

[14] The lifetime for HEER activities varies based on lighting type. Most lighting equipment require at least 20,000 hours,

Activity Definition E1 – Replace halogen downlight with an LED luminaire and/or lamp

This section outlines the equipment requirements that apply to Activity Definition E1 of the HEER method for each of the following eligible equipment classes:

LED Lamp Only – 240V Self Ballasted (Table B.2)

LED Lamp Only – Extra Low Voltage (**ELV**) (Table B.3)

LED Luminaire – recessed (Table B.4), and

LED Lamp and Driver (Table B.5).

E1: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table B.2 Activity Definition E1 – Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	• Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities (NATA) or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard **(**AS/NZS 62560**)**	• Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme**.** *Note: Certificate must be issued for the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

E1: LED Lamp Only – ELV

Description: An LED Lamp that runs off an existing Extra-low voltage lighting converter (ELC) designed for retrofitting into an existing Luminaire or Lamp holder. These are typically used as a replacement for ELV Tungsten halogen Lamps

Relevant Australian safety standard: Not applicable

Table B.3 Activity Definition E1 - Equipment Class: LED Lamp Only – ELV

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Nominal Lamp Power (**NLP**)	NLP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required) *Please note: NLP does not include power consumption of control gear. Test reports should ensure that control gear power consumption is not included.*	At time of product acceptance	10
Minimum true power factor	Demonstrated combined lamp circuit power of lamp and a compatible electronic transformer must be ≥ 0.7 *Note: The test must be conducted with an Electronic type Extra Low Voltage lighting converter designed for halogen lamps*			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 52 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	• Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities (NATA) or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	N/A (Lamp is Extra Low Voltage)	• N/A	N/A	N/A
Transformer Compatibility	Lamp must be compatible with electronic transformer	• Test report demonstrating compatibility of the lamp and the electronic transformer with which it will be installed, **and** • Electrician declaration that installed electronic transformer is a compatible model listed in the above test report	At time of implementation	1
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating dimming compatibility of lamp with the electronic transformer/dimmer combination, **and** • Electrician declaration that the installed electronic transformer/dimmer combination is a compatible combination listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A
Minimum true power factor	Combined power factor of lamp and installed electronic transformer ≥ 0.7	• Declaration by electrician who performed or supervised the installation	At time of implementation	N/A

E1: LED Luminaire – recessed

Description: An LED Luminaire intended for use as a recessed luminaire as defined in AS/NZS 60598.2.2 Luminaires – Particular requirements – Recessed luminaires.

Relevant Australian safety standard:

- Luminaire: AS/NZS 60598.2.2 Luminaires - Particular requirements - Recessed luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC. or AC. supplied electronic control gear for LED modules.

Table B.4 Activity Definition E1 - Equipment Class: LED Luminaire - recessed

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the luminaire, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14). The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.2, AS/NZS 61347.1, AS/NZS 61347.2.13)	• Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
	If Control Gear is Independent	• Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the luminaire is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of luminaire with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

E1: LED Lamp and Driver

Description: An LED-reflector Lamp and matching LED Driver intended as an alternative to a Mirrored Reflector Halogen Lamp.

Relevant Australian safety standards: Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC or AC supplied electronic control gear for LED modules.

Table B.5 Activity Definition E1 - Equipment Class: LED Lamp and Driver

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required) *Note: The test must be conducted with the driver the lamp is supplied with. The lamp will only be approved for installation with the same driver it was tested with.*	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Control gear complies with relevant Australian safety standard (AS/NZS 61347.1, AS/NZS 61347.2.13)	If Control Gear is built-in: • Certificate of suitability for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*.	At time of product acceptance	N/A
		If Control Gear is Independent: • Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp and driver is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp and driver with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

Activity Definition E2 – Replace a linear halogen floodlight with a high efficiency lamp

This section outlines the equipment requirements that apply to Activity Definition E2 of the HEER method for the following eligible equipment class:

- LED Luminaire - Floodlight (Table B.6).

E2: LED Luminaire – Floodlight

Description: An LED Luminaire intended for use as a floodlight as defined in AS/NZS 60598.2.5 Luminaires – Particular requirements – Floodlights.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.5 Luminaires – Part 2.2: Particular requirements – Floodlights.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC. or AC supplied electronic control gear for LED modules.

Table B.6 Activity Definition E2 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)			
Minimum true power factor	≥ 0.55	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 3,650 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Lifetime	L_{70} (70% of initial Downward Light Output) at 3,650 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the luminaire, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be for the same exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.5)	• Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*.	At time of product acceptance	N/A
	If Control Gear is Independent, Control Gear complies with relevant Australian safety standard (AS/NZS 61347.1, AS/NZS 61347.2.13)	• Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E2.1 of the ESS Rule	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

Activity Definition E3 – Replace a parabolic aluminised reflector (PAR) lamp with efficiency luminaire and/or lamp

This section outlines the equipment requirements that apply to Activity Definition E3 of the HEER method for the following eligible classes of equipment:

- LED Lamp Only – 240V Self Ballasted (Table B.7), and
- LED Luminaire – Floodlight (Table B.8).

E3: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table B.7 Activity Definition E3 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 45 lumens/watt			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at least 12,000 hrs	• Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard (AS/NZS 62560)	• Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme. *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E3.1 of the ESS Rule	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

E3: LED Luminaire – Floodlight

Description: An LED Luminaire intended for use as a floodlight as defined in AS/NZS 60598.2.5 Luminaires – Particular requirements – Floodlights.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.5 Luminaires - Particular requirements – Floodlights.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC or AC supplied electronic control gear for LED modules.

Table B.8 Activity Definition E3 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)			
Minimum true power factor	≥ 0.55	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Luminous efficacy	≥ 45 lumens/watt			
Lifetime	L_{70} (70% of initial Downward Light Output) at least 12,000 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at least 12,000 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.5)	• Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
	If Control Gear is Independent	• Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E3.1 of the ESS Rule	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	• Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

Activity Definition E5 – Replace a T8 or T12 luminaire with a LED luminaire

This section outlines the equipment requirements that apply to Activity Definition E5 of the HEER method for the following eligible classes of equipment:

- LED Luminaire - Linear Lamp (Table B.9).

E5: LED Luminaire – Linear Lamp

Description: An LED Luminaire intended for use as an alternative to a linear fluorescent Luminaire, where the Luminaire houses a matching Linear LED tube or a linear array of integrated LEDs. Where the Luminaire uses a Linear LED tube, the Luminaire must not be compatible with a linear fluorescent Lamp.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.1 Luminaires - Particular requirements - Fixed general purpose luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC or AC supplied electronic control gear for LED modules.

Table B.9 Activity Definition E5 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at least 20,000 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Lifetime	L_{70} (70% of initial Downward Light Output) at least 20,000 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) • The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.1)	• Certificate of suitability to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*	At time of product acceptance	N/A
	If Control Gear is independent	• Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E5.1 of the ESS Rule	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body. Must be the same or higher than the existing equipment.	At time of implementation	1

Activity Definition E11 – Replace an Edison screw or bayonet lamp with an LED lamp for general lighting purposes

This chapter specifies the equipment requirements that apply to Activity Definition E11 of the HEER method for the following eligible equipment class:

- LED Lamp Only – 240V Self Ballasted (Table B.10).

The information required to identify the minimum lumen output required for this activity is provided in section 4.5.2 of this document.

E11: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table B.10 Activity Definition E11 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Base (socket type)	The lamp must have an Edison screw or bayonet base.	• Product specification sheet	At time of product acceptance	N/A
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 8,400 hrs	• Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard (AS/NZS 62560)	• Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme**.** Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	The same or higher than the existing equipment, as defined in Table 4.5.2 of this document	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1

Minimum Light Output for Activity E11

For Activity E11, ACPs must ensure that the Light Output (measured in lumens) of the new lighting equipment is the same or higher than the existing lighting equipment it is replacing. This will be checked as part of any audit conducted of the ACP.

To ensure that ACPs meet this requirement, they must:

- check the type of the existing lighting equipment and its LCP
- refer to Table B.11 and note the minimum Light Output required for the new lighting equipment, and
- ensure that the new lighting equipment they install has a Light Output that is the same, or higher than this.

Table B.11 Activity Definition E11 - Minimum Light Output for LED Lamp Only – 240V Self Ballasted to replace different types of lighting equipment

Existing equipment – LCP (Watts)			**New equipment – Minimum Light Output (lumens)**
Incandescent	**Halogen**	**CFL[15]**	**LED Lamp Only – 240V Self Ballasted**
25 ≤ 39	18 ≤ 27	4 ≤ 6	250
40 ≤ 59	28 ≤ 41	7 ≤ 10	500
60 ≤ 74	42 ≤ 51	11 ≤ 14	800
75 ≤ 99	52 ≤ 69	15 ≤ 18	1100
100 or above	70 or above	19 ≤ 23	1500

[15] Compact fluorescent light

Activity Definition E13 – Replace a T5 luminaire with a LED luminaire

This section outlines the equipment requirements that apply to Activity Definition E13 of the HEER method for the following eligible classes of equipment:

- LED Luminaire - Linear Lamp (Table B.12).

E13: LED Luminaire – Linear Lamp

Description: An LED Luminaire intended for use as an alternative to a linear fluorescent Luminaire, where the Luminaire houses a matching Linear LED tube or a linear array of integrated LEDs. Where the Luminaire uses a Linear LED tube, the Luminaire must not be compatible with a linear fluorescent Lamp.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.1 Luminaires - Particular requirements - Fixed general purpose luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for DC. or AC supplied electronic control gear for LED modules.

Table B.12 Activity Definition E13 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** • Documentation showing the laboratory is accredited to perform IES LM-79 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at least 20,000 hrs	**Option 1** • Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** • IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Lifetime	L_{70} (70% of initial Downward Light Output) at least 20,000 hrs	**Option 2** • IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** • Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** • In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) • The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. • Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** • IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	• Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** • Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.1)	• Certificate of suitability to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** • JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*	At time of product acceptance	N/A
	If Control Gear is independent	• Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	• Test report demonstrating compatibility of lamp with the dimmer, **and** • Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E5.1 of the ESS Rule	• Test report using IES LM-79 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body.	At time of implementation	1

C Lighting equipment requirements – PIAM&V and MBM

This section sets out the equipment requirements for the PIAM&V and MBM methods.

Table C.1 Equipment and evidence requirements

Required Documentation		**Specifications**	**Electrical Safety**	
Category	**Relevant Australian Standard**	**Data/Specification Sheet**	**Australian Certificate of Approval**	**Certificate of Suitability**
LED Lamp only - ELV	Not applicable			
LED Lamp only - 240V Self Ballasted	AS/NZS 62560	Yes	For lamp	
Induction Luminaire	AS/NZS 60598.1	Yes		For luminaire[1]
LED lamp and driver	AS/NZS 61347.1 and IEC 61347.2.13	Yes	for control gear, if control gear is a declared article[2]	for luminaire,[1] if control gear is not a declared article[2]
Modified Luminaire - LED Linear Lamp	AS/NZS 60598.2.1or AS/NZS 60598.2.2			
LED Luminaire - fixed type	AS/NZS 60598.2.1			
LED Luminaire - Linear Lamp	AS/NZS 60598.2.1or AS/NZS 60598.2.2			
LED Luminaire - floodlight	AS/NZS 60598.2.5			
LED Luminaire - recessed	AS/NZS 60598.2.2			
LED Luminaire - high/lowbay	AS/NZS 60598.2.1			

Required Documentation		Specifications	Electrical Safety	
Category	**Relevant Australian Standard**	**Data/Specification Sheet**	**Australian Certificate of Approval**	**Certificate of Suitability**
LED Luminaire - streetlight	AS/NZS 60598.1 and AS/NZS 1158.6 or IEC 60598-2-3	Yes	for control gear, if control gear is a declared article[2]	for luminaire,[1] if control gear is not a declared article[2]
LED Luminaire - emergency lighting[3]	AS/NZS 60598.2.22			
LED Luminaire - hospital use	AS/NZS 60598.2.25			
Voltage Reduction Unit	AS/NZS 60335.1	Yes		Yes

1 A luminaire is defined as an apparatus that distributes, filters or transforms the light emitted from a light source, including Lamps, Control Gear and all components necessary for fixing and protecting the Lamps, including the troffer.

2 The control gear is a declared article under the published NSW electrical safety requirements if it provides an output not exceeding 50 volts AC or 120 volts ripple free DC, **and** is a type to provide supply to separate luminaires.

3 Emergency Lighting with multiple power modes must be tested at full output power.

D Additional Information – Evidence Documents

D.1 Lamp Life

ELTs must have a minimum lamp life depending on the calculation method (refer to the Appendices). You must supply evidence of the lighting equipment lamp life, as outlined below.

What you must provide for lamp life

You must enter the 'lamp lifetime', and this figure must be either:

- the 'Reported L70' in the TM-21 or IES LM-80 report for the test condition with a case temperature and drive current equal to or greater than the case temperature and drive current of the LED chip in your lamp or luminaire, or
- the 'Reported L70' from the 'interpolation'[16] in the TM 21 or IES LM-80 report using your actual case temperature. Additional guidance and a worked example provided below.

For the LED chip:

- Item 1 - an IES LM-80 test report issued by a laboratory accredited by NATA (or equivalent[17]) to test against IES LM-80, and
- Item 2 - evidence of the laboratory's accreditation with NATA or an equivalent accreditation body (which must show the name of the laboratory, the accreditation organisation, and show that the laboratory is accredited to test against IES LM-80), and
- Item 3 - an IES TM-21 test report using the results from the LM-80 report. This report is usually included as an appendix or section of the LM-80 report or contained in an In-situ Temperature Measurement Test (ISTMT) report.

For the lamp or luminaire:

- Item 4 - a declaration from the lamp or luminaire manufacturer and / or a test report from a laboratory (e.g., an ISTMT report) that states:
  - the brand and model of your lamp or luminaire and the brand and model of all LED chips used in your lamp or luminaire,
  - the in-situ case temperature of the LED chip in the product when it is installed in the lamp or luminaire and operating normally, and
  - the in-situ drive current of the LED chip in the product when it is installed in the lamp or luminaire and operating normally.

[16] The 'interpolation' from a TM-21 report further refines a 'projected' lifetime between two of the case temperatures tested in the LM-80 report using the specific in-situ case temperature and in-situ drive current of the LED chip(s) when installed in the luminaire.

[17] An equivalent laboratory is a laboratory accredited by an organisation included in the Mutual Recognition Agreement (MRA) Network published by NATA.

For induction lamps:

For induction lamps, you must provide a manufacturer's datasheet showing the nominal lamp life.

If you are applying for an electro-magnetic induction lamp, the Asset Lifetime figure to be entered is the value specified by the manufacturer and must be clearly displayed on the specification sheet.

LED lamp life test reports

LED lamps and LED luminaires contain an LED chip which produces the light. The Illuminating Engineering Society (**IES**) has two standards that are used to estimate the operating life of an **LED chip** used in lighting equipment:

LM-80-08: Measuring Lumen Maintenance of LED Light Sources:

- LM-80-08 is a test method for measuring the degradation of light output (measured in lumens) from an LED chip over time (lumen maintenance).
- The measurement period is typically between 6,000 and 10,000 hours.
- Tests are done for different case temperatures and drive currents. LM-80 requires only two test temperatures, one of which must be either 55˚C or 85˚C.
- The outputs of the LM-80-08 report are used in the TM-21-11 calculations.

TM-21-11: Projecting Long Term Lumen Maintenance of LED Light Sources:

- TM-21-11 specifies the process for using the results from the LM-80-08 test to project a lifetime for a lamp or luminaire using the LED chip tested.

Value for lamp life:

The value you enter must be the 'Reported L_{70}'[18] from the TM-21-11 report for the test conditions that correspond to the operation of the same LED chip in your lamp or luminaire, namely the test conditions where:

- the drive current tested is greater than, or equal to the in-situ drive current,[19] and
- the case temperature tested is greater than, or equal to the in-situ case temperature.[20]

To be accepted for use in the ESS, the lamp life must be at least 30,000 hours.

---

[18] The TM-21-11 method applies limitations to the 'calculated' and 'projected lifetime' based on the number of samples in the LM-80-08 test. For example, a test with 20 or more samples is limited to six times the duration of the LM-80-08 test. As such, a test of 20 samples for 6,000 hours is limited to (6,000 hours x 6 = 36,000 hours). This limited lifetime is the 'Reported L_{70}'. For the 'Reported L_{70} (Dk)'result, (L_{70} refers to 70% lumen maintenance, Dk relates to the duration of the LM-80-08 test e.g., 6k is a 6,000-hour test).

[19] The in-situ drive current is the current delivered to each individual LED chip when it is installed in the lamp or luminaire and operating normally (and not the total current delivered to the lamp or luminaire). An increase in the drive current decreases lamp life.

[20] The in-situ case temperature is the case temperature of each individual LED chip when it is installed in the lamp or luminaire and operating normally (and not the case temperature from the LM-80-08 test). An increase in the case temperature decreases lamp life.

Example

An applicant applies for acceptance of an LED floodlight Australian High Bays, model HB-0150W that uses the following LED chip:

- Brand: LED Chips International and Model: LCI -2150.

The applicant uploads:

- an LM-80-08 report for the LED chip,
- evidence that laboratory performing the LM-80-08 test was accredited by an accreditation body to conduct such a test,
- a TM-21-11 report which references the LM-80-08 report, and
- a manufacturer's declaration from the floodlight manufacturer stating:
  - the brand and model of the floodlight (Australian High Bays, HB-0150W),
  - the brand and model number of the LED Chip used in the floodlight (LED Chips International LCI-2150),
  - the in-situ case temperature of the chip, as tested in the floodlight: 60˚C, and
  - the in-situ drive current of the chip, as tested in the floodlight: 120mA.

The TM-21-11 report lists results for a minimum of two case temperatures as seen in Table D.1, one of which must be either 55˚C or 85˚C.

Table D.1: Example TM-21-11 results

Case temperature	Drive current	'Reported L70'	Applicability of result for this floodlight
55 ˚C	150 mA	>42,000 hours	Invalid, as the case temperature tested is less than the in-situ case temperature of 60˚C
85 ˚C	150 mA	>36,000 hours	Valid
105 ˚C	150 mA	27,000 hours	

The applicant would enter a value of **36,000 hours** in the Lamp Life, corresponding to the LM-80-08 test at 85˚C case temperature and 150mA drive current.

Checks for lamp life evidence

The applicant checks the following information before submission of the application:

- The luminaire in the manufacturer's declaration matches the product in its ESS application.
- The LED Chip in the luminaire matches the LED chip in the LM-80-08 test.
- The laboratory producing the LM-80-08 report is accredited to NATA or equivalent to conduct LM-80-08 tests.
- The TM-21-11 test uses results from the LM-80-08 report provided in the application.

- The in-situ case temperature and drive current in the manufacturer's declaration are for each individual LED chip when it is installed in the luminaire and operating normally (and not the case temperature and drive current at which the LM-80-08 test was conducted).
- The test drive current is greater than, or equal to the in-situ drive current.
- The test case temperature is greater than, or equal to the in-situ case temperature.
- The reported Lamp Life is the 'Reported L_{70}' value not the 'Calculated L_{70}' or 'Projected L_{70}'.
- A valid 'Reported L_{70}' value has been reported in the Lamp Life field.
- The valid 'Reported L_{70}' result is equal to or greater than 30,000 hours.

D.2 Sponsorship forms for non-ACP applicants

Where an application for lighting or chimney dampers is made by a non-ACP, the application must be sponsored by at least two ACPs to confirm that the application relates to products that will genuinely be installed as part of an ESS lighting upgrade. To sponsor a product, an authorised representative of an ACP must complete the Sponsorship Form for the product(s) and the non-ACP must then submit the completed form with their application. Lighting suppliers or manufacturers interested in having their equipment used in ESS upgrades should contact an ACP directly.

D.3 HEER Tool

The HEER method has additional product requirements for lighting that the other methods do not have. The HEER Tool identifies equipment requirements and required documents to meet safety and performance standards and must be submitted with HEER lighting applications.

D.4 Product specification sheet

Where a product specification sheet(s) is required, it must clearly identify the brand name and model number/s.

For lighting applications, the product specification sheet must include a clear photograph of the lamp, luminaire, or Voltage Reduction Units (VRUs). The brand and model number on the specification sheet must exactly match the brand and model number on the electrical safety certificate. This must be the same brand and model number used when the product is sold or supplied to the Australian marketplace.